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	Application No.	Applicant(s)
Notice of Allowability	10/064,639	DOWN ET AL.
	Examiner	Art Unit	
	Cindy D. Khuu	2863	

*-- The **MAILING DATE** of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-31*.

3. ☒ The drawings filed on *08/01/2002* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the

            International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date *08/30/2002*

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

DETAILED ACTION

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This Examiner's Amendment was made to correct the abstract for informalities and to keep the abstract within the range of 50-150 words.

The application has been amended as follows:

Replace the abstract with:

-- A method for building calibration lookup tables from sparse data. The method includes initializing the lookup table including initializing a Kalman filter corresponding to the lookup table, where the Kalman filter includes state estimates that correspond to table element values in the lookup table. The method includes receiving sensor measurement data and applying the sensor measurement data to the lookup table. Applying the sensor measurement data to the lookup table includes updating the Kalman filter in response to the sensor measurement data. The method includes receiving a constraint on the table element values and receiving an output request. The constraint is applied to the lookup table in response to receiving the output request and to the storing. Applying the constraint includes updating the Kalman filter in response to the constraint. The method includes outputting a lookup table element in response to the applying the constraint and the output request. --

Allowable Subject Matter

Claims 1-31 are allowed.

Pertinent Art Cited

The following US Patent (6,502,061) reveals the current state of the art:

A method and system comprising: a Kalman filter (**Column 1: Line 22**) and a lookup table (**Column 2: Line 26**) wherein said Kalman filter includes state estimates (**Column 2: Lines 39-40**); receiving sensor measurement data (**Column 12: Lines 51-53**); receiving a constraint (**Column 14: Line 5**).

Pertinent art fails to teach at least the "applying said constraint to said lookup table, wherein said applying said constraint to said lookup table includes updating said Kalman filter in response to said constraint" (Claims 1, 13, 20, 25, 30, and 31).

Reason for Allowance

The following is an examiner's statement of reasons for allowance:

Pertinent art fails to teach:

Regarding claims 1 and 13 comprising:
A method for building a calibration lookup table, the method comprising: initializing said lookup table including initializing a Kalman filter corresponding to said lookup table wherein said Kalman filter includes state estimates corresponding to table element values in said lookup table; receiving sensor measurement data; applying said sensor measurement data to said lookup table, wherein said applying said sensor measurement data to said lookup table includes updating said Kalman filter in response

to said sensor measurement data; receiving a constraint on said table element values; receiving an output request; storing a duplicate copy of said Kalman filter in response to said receiving an output request; applying said constraint to said lookup table in response to said receiving an output request and to said storing, wherein said applying said constraint to said lookup table includes updating said Kalman filter in response to said constraint; outputting a lookup table element in response to said applying said constraint and to said output request; and replacing said Kalman filter with said duplicate copy of said Kalman filter in response to said outputting.

Regarding claims 20 and 25 comprising:

A system for building calibration lookup tables, the system comprising: a sensor attached to a machine being diagnosed; a host system in communication with said sensor, said host system including software to implement the method comprising: initializing said lookup table including initializing a Kalman filter corresponding to said lookup table wherein said Kalman filter includes state estimates corresponding to table element values in said lookup table; receiving sensor measurement data; applying said sensor measurement data to said lookup table, wherein said applying said sensor measurement data to said lookup table includes updating said Kalman filter in response to said sensor measurement data; receiving a constraint on said table element values; receiving an output request; storing a duplicate copy of said Kalman filter in response to said receiving an output request; applying said constraint to said lookup table in response to said receiving an output request and to said storing, wherein said applying said constraint to said lookup table includes updating said Kalman filter in response to said constraint; outputting a lookup table element in response to said applying said constraint and to said output request; and replacing said Kalman filter with said duplicate copy of said Kalman filter in response to said outputting.

Regarding claims 30 and 31 comprising:

A computer program product for building a calibration lookup table, the product comprising: a storage medium readable by a processing circuit and storing instructions

for execution by the processing circuit for performing a method comprising: initializing said lookup table including initializing a Kalman filter corresponding to said lookup table wherein said Kalman filter includes state estimates corresponding to table element values in said lookup table; receiving sensor measurement data; applying said sensor measurement data to said lookup table, wherein said applying said sensor measurement data to said lookup table includes updating said Kalman filter in response to said sensor measurement data; receiving a constraint on said table element values; receiving an output request; storing a duplicate copy of said Kalman filter in response to said receiving an output request; applying said constraint to said lookup table in response to said receiving an output request and to said storing, wherein said applying said constraint to said lookup table includes updating said Kalman filter in response to said constraint; outputting a lookup table element in response to said applying said constraint and to said output request; and replacing said Kalman filter with said duplicate copy of said Kalman filter in response to said outputting.

It is these features found in the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claims 2-12, 14-19, 21-24, and 26-29 are allowed due to their dependency on claims 1, 13, 20, 25, 30, and 31.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
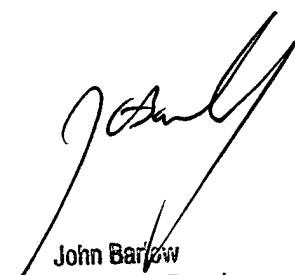
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

5/16/05

John Barlow
Supervisory Patent Examiner
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